Remarks

Applicants respectfully request reconsideration in view of the foregoing amendments and the following remarks. With entry of this amendment, claims XXX remain pending.

Patentability of Claims 1-5, 14-20, and 26-32 Over Nguyen and Malvar

Claims 1-5 have been rejected under 35 U.S.C. § 102(b) as being unpatentable over Nguyen et al., U.S. Patent No. 6,393,156 (hereafter "Nguyen"), in view of Malvar et al., U.S. Patent No. 5,805,739 (hereafter "Malvar"). Applicants respectfully traverse the rejection.

Claim 1, as amended, recites the language: "wherein the pre-processing filter is more relaxed and the post-processing filter is more aggressive relative to filters that are respectively inverses of the other." Claims 3-5 recite language that further clarifies this limitation in mathematical terms. Claim 3 recites, "wherein the pre-processing filter has eigenvalues that are less than that of a filter that is an inverse of the post-processing filter." Claim 4 recites, "wherein the post-processing filter has eigenvalues that are greater than that of a filter that is an inverse of the pre-processing filter." Claim 5 recites, "wherein the pre-processing filter has eigenvalues and the post-processing filter has eigenvalues, such that a product of the filters' eigenvalues is less than one." These limitations are not taught or suggested by the art.

Nguyen describes an image/video enhancement that adds pre-processing and post-processing steps to modify the transforms used in a standard data compression coder to produce overlapping-basis-type transforms. *See*, Nguyen, at Abstract. The Office indicates and Applicants agree that "Nguyen fails to disclose wherein the post-processing filter is not an inverse of the pre-processing filter."

The Office cites to Malvar as allegedly teaching use of a post-processing filter that is not an inverse of the pre-processing filter. Indeed, Malvar at column 7, lines 52-67 first clarifies that the orthogonal pre- and post-filters in the implementation described in the Malvar specification are orthogonal (exact inverses), before speculating that the reconstructor window operator (decoder post-processing filter) may be chosen to differ from an exact inverse of the encoder lapping window operator (pre-processing filter).

Nevertheless, Malvar lacks any teaching or suggestion to design the pre-processing and post-processing filter coefficients, such that the pre-processor is more relaxed and post-processor

is more aggressive (or alternatively stated relationships of eigenvalues in claims 3-5). In relation to these limitations, the Office cites to the description in Malvar at column 7, lines 20-35 and column 6, lines 5-25. However, neither of these paragraphs relate to pre- and post-processing filters that are not inverses of each other, much less to such filters being designed such that the pre-processing filter is more relaxed and post-processing filter is more aggressive (or more specifically the relationship of eigenvalues of the filters as recited in claims 3-5). First, Malvar clarifies at column 7, lines 56-67 that the implementation previously presented in the specification is an implementation of orthogonal filters, as opposed to which an non-orthogonal implementation where the window operators are not inverses could be used. Based on this statement, it is clear that the preceding paragraphs (column 7, lines 20-35 and column 6, lines 5-25) relate to the implementation of window operators that are orthogonal and exact inverses.

Moreover, a close reading of these paragraphs shows that they do not teach or suggest the recited limitations of the claims. As to the paragraph in Malvar at column 7, lines 20, Malvar merely describes that the window operators achieve different distortion measurements for different sizes of the vector quantizer (N). Because the examples compare various sizes of the vector quantizer, the comparisons do not suggest anything about the choice of pre- and post-filter, much less suggest that the pre-filter be more relaxed and post-filter be more aggressive.

As to the paragraph in Malvar at column 6, lines 4-25, the description does mention the word "eigenvalue" at column 6, line 22. However, the description here is in reference to the vector source at the input to the vector quantizer, and not in reference to the eigenvalues of the pre-filter and post-filter. *See*, Malvar at column 6, lines 3-6. Moreover, there is no comment made of the relationship between the eigenvalues of the pre- and post-filters. The description therefore lacks any suggestion that the pre- and post-filters are designed to have the particular eigenvalue relationships as recited in claims 3-5.

For at least these reasons, claims 1 and 3-5 are patentable over the cited art. Claims 14, 16-20, 26, and 27-32 also recite or depend from claims that recite the like limitations and are patentable over the cited art for at least the same reasons.

Patentability of Claims 9-13, 21-25 and 33-37 Over Nguyen, in view of Malvar

Claims 9-13, 21-25 and 33-37 also have been rejected under 35 U.S.C. § 103 as being unpatentable over Nguyen, in view of Malvar. Applicants traverse the rejections.

These claims relate to selecting among pairs of pre-processing/post-processing filters based on a quality metric (the quantization parameter) with which the encoding is done. For example, claim 9 recites: "a switch for selecting a pair of pre-processing and post-processing filters from the set for use with the block transform-based codec according to the compression quality parameter."

Claim 10 recites the additional limitation, "wherein the compression quality parameter is a quantization parameter."

Claim 11 recites the additional limitation, "wherein the block transform-based codec explicitly encodes a value of the compression quality parameter into the compressed representation at encoding."

Claim 12 recites the additional limitation, "wherein the switch operates to enable processing of the spatial-domain lapped transform by a pre-processing and post-processing filter pair when the compression quality parameter is indicative of low quality, and disable processing by the filter pair when the quality metric is indicative of high quality."

Claim 13 recites the additional limitation, "wherein the switch operates to select among a bank of plural filter pairs having progressively more relaxed pre-processing filter and progressively more aggressive post-processing filter as the compression quality parameter is indicative of decreasing quality."

Claims 21-25 and 33-37 recite similar limitations.

These limitations are not taught or suggested by the cited art.

With respect to these limitations, the Office cites to the description in Malvar at column 7, lines 20-36. Applicants respectfully disagree with the Office as to the disclosure of this paragraph. In this paragraph, Malvar describes the overall mean-square distortion that was achieved for various different VQ block sizes (i.e., size of the vector quantizer 32 transform block). *See*, Malvar at column 7, lines 25-29. Accordingly, it is the transform block size that is varied for the different distortion measurements, not choice of the pre-/post-filter pair. Moreover, the mean-square distortion is a measurement of the resulting distortion measured in the reconstructed output. It is not a compression quality parameter governing the quality of

coding by the encoder. (See, e.g., Specification at page 10, lines 19 through page 11, line 27.) Most significantly, however, the paragraph simply illustrates the distortion achieved by various vector quantizer implementation examples. There is no teaching or suggestion that an encoder/decoder include a switch to select among pre-/post-filter pairs based on a compression quality parameter (such as, the quantization parameter) that governs the quality at which the encoder is to encode the content.

For at least this reason, these claims are patentable over this art.

New Claims

New claims 38-41 are supported by the description in the specification at page 10, line 19 through page 11, line 27, and Figure 7. The claims contain limitations distinguishable over the cited art for at least the reasons discussed above for claims 9-13. New claims 42-43 are supported in the specification at page 13, lines 13-21. No new matter is added.

Request for Interview

If any issues remain, the Examiner is formally requested to contact the undersigned attorney prior to issuance of the next Office Action in order to arrange a telephonic interview. It is believed that a brief discussion of the merits of the present application may expedite prosecution. Applicants submit the foregoing formal Amendment so that the Examiner may fully evaluate Applicants' position, thereby enabling the interview to be more focused.

This request is being submitted under MPEP § 713.01, which indicates that an interview may be arranged in advance by a written request.
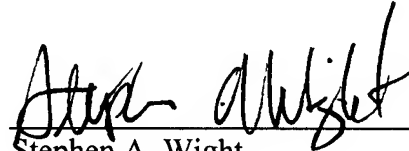
Conclusion

In view of the foregoing amendments and remarks, the application is now in condition for allowance.

Respectfully submitted,

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